COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
VALLEY REGIONAL OFFICE
P.O. Box 3000, Harrisonburg, Virginia 22801
(540) 574-7800 Fax (540) 574-7878
Located at 4411 Early Road, Harrisonburg, VA
www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Amy Thatcher Owens
Regional Director

June 26, 2017

Sent via e-mail only
Mr. Jamey Walters
Plant Manager
Kingspan Insulation, LLC
172 Pactiv Way
Winchester, Virginia 22603

Location: Frederick County
Registration No.: 81095

Dear Mr. Walters:

Attached is a significant modification to your permit to operate an extruded polystyrene foam production facility pursuant to 9 VAC 5 Chapter 80, Article 1, of the Virginia Regulations for the Control and Abatement of Air Pollution. This permit modification reflects the removal of the existing E-1 foam extrusion line and the construction of the new E-7 foam extrusion line and other ancillary changes that are authorized in the minor NSR permit dated December 20, 2016.

This permit contains legally enforceable conditions. Failure to comply may result in a Notice of Violation and civil penalty. Please read all permit conditions carefully.

In the course of evaluating the application and arriving at a final decision to approve the project, the Department of Environmental Quality (DEQ) deemed the application complete on May 8, 2017. DEQ solicited written public comments by placing a newspaper advertisement in The Winchester Star on May 12, 2017. The 30-day comment period (provided for in 9 VAC 5-80-270) expired on June 12, 2017, with no public comments having been received by this office.

This permit approval shall not relieve Kingspan Insulation LLC of the responsibility to comply with all other local, state and federal permit regulations.

The Board's Regulations as contained in Title 9 of the Virginia Administrative Code 5-170-200 provide that you may request a formal hearing from this case decision by filing a

petition with the Board within 30 days after this case decision notice was mailed or delivered to you. 9 VAC 5-170-200 provides that you may request direct consideration of the decision by the Board if the Director of the DEQ made the decision. Please consult the relevant regulations for additional requirements for such requests.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date you actually received this permit or the date on which it was mailed to you, whichever occurred first, within which to initiate an appeal of this decision by filing a Notice of Appeal with:

David K. Paylor, Director
Department of Environmental Quality
P. O. Box 1105
Richmond, VA 23218

If this permit was delivered to you by mail, three days are added to the thirty-day period in which to file an appeal. Please refer to Part Two A of the Rules of the Supreme Court of Virginia for information on the required content of the Notice of Appeal and for additional requirements governing appeals from decisions of administrative agencies.

If you have any questions concerning this permit, please contact Kevin Covington at the Valley Regional Office at kevin.covington@deq.virginia.gov or (540) 574-7881.

Sincerely,

Janarday R. Pandey, P.E.
Air Permits Manager

Attachment: Permit

Copies: Manager, Data Analysis (via e-mail)
Chief, Air Enforcement Branch (3AP13), U.S. EPA, Region III (via e-mail)
Jason Malone, Kingspan (via e-mail)
Russell Bailey, Trinity Consultants (via e-mail)

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

VALLEY REGIONAL OFFICE

Federal Operating Permit
Article 1

This permit is based upon the requirements of Title V of the Federal Clean Air Act and Chapter 80, Article 1 of the Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution. Until such time as this permit is reopened and revised, modified, revoked, terminated or expires, the permittee is authorized to operate in accordance with the terms and conditions contained herein. This permit is issued under the authority of Title 10.1, Chapter 13, §10.1-1322 of the Air Pollution Control Law of Virginia. This permit is issued consistent with the Administrative Process Act, and 9 VAC 5-80-50 through 9 VAC 5-80-300 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution of the Commonwealth of Virginia.

Authorization to operate a Stationary Source of Air Pollution as described in this permit is hereby granted to:

Permittee Name:	Kingspan Insulation LLC
Facility Name:	Kingspan Insulation – Winchester Site
Facility Location:	172 Pactiv Way Winchester, Virginia
Registration Number:	81095

Permit Number	Effective Date	Modification Date	Expiration Date
VRO 81095	June 7, 2015	June 26, 2017	June 6, 2020

Regional Director

6/26/17

Signature Date

Preliminary Information, 9 pages
Permit Conditions, 50 pages
Attachment A - Source Testing Report Format, 1 page
Attachment B - Regenerative Thermal Oxidizer CAM Plan, 1 page

Facility Information

Permittee
Kingspan Insulation LLC
172 Pactiv Way
Winchester, Virginia 22603

Responsible Official
Jamey Walters
Plant Manager

Facility
Kingspan Insulation – Winchester Site
172 Pactiv Way
Winchester, Virginia 22603

Contact Person
Jason Malone
Technical Manager
540-771-5120

Plant Identification Number: 51-069-0096

Facility Description: SIC Code 3086 - Plastic Foam Products
NAICS 326140 - Polystyrene Foam Product Manufacturing

Kingspan Insulation LLC (Kingspan or the Company) operates an extruded polystyrene foam production facility in Winchester, Virginia. The facility produces industrial foam products for building underlayment and insulation. The facility has four building product extrusion lines, two thermoforming lines, two housewrap converting lines, and one housewrap printing line. In addition, there are four reclaim lines that reprocess off spec product and trim scrap. The basic operations at the facility include raw material receiving and handling, extrusion, printing, roll storage, thermoforming, converting, finished goods storage, and reclaim.

Emission Units

Equipment to be operated consists of:

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
E-2 Line (Attic Vent/Roll Stock)							
ES-21	-	Foam Extruder E-2	1250 lbs foam/hr	-	-	-	6/1/2017
ES-27, ES-28, ES-28a	S27	Extrusion Line E-2 Laminators and Co-Extruder	-	ESP (Smog Hog) United Air Specialists Model # SH20PEH	C27	PM/PM10	6/1/2017
ES-32	-	Roll Storage Area	-	-	-	-	6/1/2017
ES-41 and ES-214	-	Thermoformers (serves E-2)	-	-	-	-	6/1/2017
ES-67	-	Flexographic Printer	1250 lbs of foam/hr	-	-	-	6/1/2017
ES-110	-	Blowing Agent Tank (up to 3 percent methanol) (serves E-2, E-4, E-6, and E-7)	18,000 gallons	-	-	-	6/1/2017
ES-114	-	VOC Blowing Agent Tank (serves E-2 & E-4)	30,000 gallons	Pressure tank with inherent controls	-	VOC	6/1/2017
ES-34, ES-58	-	Inside Finished Goods Storage Warehouses (serves E-2, E-4, E-6, and E-7)	-	-	-	-	6/1/2017
E-4 Line (Underlayment)							
ES-22	-	Foam Extruder E-4	1700 lbs foam/hr	-	-	-	6/1/2017

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
ES-29, ES-29a, ES-30, ES-30a	S29	Extrusion Line E-4 Laminators and Co-Extruders	-	ESP (Smog Hog) United Air Specialists Model # SH20PEH	C29	PM/PM-10	6/1/2017
ES-117	-	Flexographic Printer	1700 lbs of foam/hr	-	-	-	6/1/2017
ES-110	-	Blowing Agent Tank (up to 3 percent methanol) (serves E-2, E-4, E-6, and E-7)	18,000 gallons	-	-	-	6/1/2017
ES-114	-	VOC Blowing Agent Tank (serves E-2 & E-4)	30,000 gallons	Pressure tank with inherent controls	-	VOC	6/1/2017
ES-34, ES-58	-	Inside Finished Goods Storage Warehouses (serves E-2, E-4, E-6, and E-7)	-	-	-	-	6/1/2017
E-6 Line (Insulation Board)							
ES-17, ES-18	-	Vacuum Transfer Blower Systems	5500 lb/hr, 1200 lb/hr	Inherent control	-	PM/PM-10	6/1/2017
ES-24	-	Foam Extruder E-6	5500 lb/hr	-	-	-	6/1/2017
ES-132	-	Outside Storage Pad (serves E-6, and E-7)	-	-	-	-	6/1/2017
ES-34, ES-58	-	Inside Finished Goods Storage Warehouses (serves E-2, E-4, E-6, and E-7)	-	-	-	-	6/1/2017
ES-116	-	Flexographic Printer	5500 lbs of foam/hr	-	-	-	6/1/2017
ES-110	-	Blowing Agent Tank (up to 3 percent methanol) (serves E-2, E-4, E-6, and E-7)	18,000 gallons	-	-	-	6/1/2017

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
ES-121	-	VOC Blowing Agent Storage Tank	6000 gallons	Pressure tank with inherent controls	-	VOC	6/1/2017
ES-122	-	VOC Blowing Agent Storage Tank	6000 gallons	Pressure tank with inherent controls	-	VOC	6/1/2017
ES-123	-	Insulation Board Staging/Warming Area	-	-	-	-	6/1/2017
E-7 Line (Insulation Board)							
ES-129		Foam Extruder – E-7	3,500 lb foam/hr	-	-	-	6/1/2017
ES-124		Flexographic Printer – E-7	3,500 lb foam/hr	-	-	-	6/1/2017
ES-133, ES-134	-	Vacuum Transfer Blower Systems – E-7	-	Inherent control	-	PM/PM-10	6/1/2017
ES-110	-	Blowing Agent Tank (up to 3 percent methanol) (serves E-2, E-4, E-6, and E-7)	18,000 gallons	-	-	-	6/1/2017
ES-121	-	VOC Blowing Agent Storage Tank	6000 gallons	Pressure tank with inherent controls	-	VOC	6/1/2017
ES-122	-	VOC Blowing Agent Storage Tank	6000 gallons	Pressure tank with inherent controls	-	VOC	6/1/2017
ES-123	-	Insulation Board Staging/Warming Area	-	-	-	-	6/1/2017
ES-132	-	Outside Storage Pad (serves E-6, and E-7)	-	-	-	-	6/1/2017

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
ES-34, ES-58	-	Inside Finished Goods Storage Warehouses (serves E-2, E-4, E-6, and E-7)	-	-	-	-	6/1/2017
Non-Insulation Board Reclaim (NIBR)							
ES-33	S75	Roll and Scrap Grinders including Storage Area	1000 lbs of product/hr annual average	16.7 R95NG1 RTO	C75	VOC	6/1/2017
ES-33	V42 – V45 and V64 – V66	Roll and Scrap Grinders including Storage Area	1000 lbs of product/hr annual average	American Air Filter Co. Baghouse Model # 8-36-396	C42 – C45	PM/PM-10	6/1/2017
				Ultra Industries Baghouse Model # BBVC-64M36-84	C64 – C66		
	V46 V48 V49			DCE-Vokes, Inc. Baghouse Model # DLMV30/1SH	C46, C48 C49		
ES-33a	V50 – V51	Roll and Scrap Grinders including Storage Area	1000 lbs of product/hr annual average	American Air Filter Co. Baghouse Model # 8-36-396	C50 – C51	PM/PM-10	6/1/2017
ES-42 – ES-45	V42 – V45	Fluff (Ground Scrap) Storage Silos	2513 ft^3 each	American Air Filter Co. Baghouse Model # 8-36-396	C42 – C45	PM/PM-10	6/1/2017
ES-46, ES-48, ES-49	V46 V48 V49	Fluff (Ground Scrap) Storage Silos	2513 ft^3 each	DCE-Vokes, Inc. Baghouse Model # DLMV30/1SH	C46 C48 C49	PM/PM-10	6/1/2017
ES-56, ES-57	V56, V57	Scrap Storage Bin and Feed Hopper	-	DCE-Vokes, Inc. Baghouse Model # DLMV30/1SH	C56, C57	PM/PM-10	6/1/2017

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
ES-42 to -46, -48, -49, -64 to -66	S75	Fluff (Ground Scrap) Storage Silos	2513 ft^3 each	16.7 R95NG1 RTO	C75	VOC	6/1/2017
ES-64 – ES-66	V64 – V66	Fluff (Ground Scrap) Storage Silos	2513 ft^3 each	Ultra Industries Baghouse Model # BBVC-64M36-84	C64 – C66	PM/PM-10	6/1/2017
ES-53, ES-55	S75	Reclaim Extruders R-2 and R-6	-	16.7 R95NG1 RTO	C75	VOC	6/1/2017
Insulation Board Reclaim (IBR)							
ES-33	S75	Roll and Scrap Grinders including Storage Area	1000 lbs of product/hr annual average	16.7 R95NG1 RTO	C75	VOC	6/1/2017
ES-33a	V50 – V51	Roll and Scrap Grinders including Storage Area	1000 lbs of product/hr annual average	American Air Filter Co. Baghouse Model # 8-36-396	C50 – C51	PM/PM-10	6/1/2017
ES-50	V50	Fluff (Ground Scrap) Storage Silos	2513 ft^3 each	American Air Filter Co. Baghouse Model # 8-36-396	C50	PM/PM-10	6/1/2017
ES-128	V128	Fluff (Ground Scrap) Storage Silo	4,000 cubic feet	American Air Filter Co. Baghouse	C128	PM/PM-10	6/1/2017
ES-131	V131	Fluff (Ground Scrap) Storage Silo	4,000 cubic feet	American Air Filter Co. Baghouse	C131	PM/PM-10	6/1/2017
ES-52, ES-130	S52, S130	Reclaim Extruders R-4 and R-7	-	ESP (Smog Hog) United Air Specialists Model # SHN20H	C52, C130	PM/PM-10	6/1/2017

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
Other Regulated Units							
ES-75	S75	Regenerative Thermal Oxidizer (RTO)	5.9 MMBtu/hr; 300 lbs/hr HC input	-	-	-	6/1/2017
ES-76	-	Flexographic Printer (Housewrap)	7000 yards of housewrap/hr	-	-	-	6/1/2017
ES-119	-	Sprinkler System Diesel Engine	345 hp	-	-	-	RICE MACT
ES-120	-	Sprinkler System Diesel Engine	345 hp	-	-	-	RICE MACT

*The Size/Rated capacity is provided for informational purposes only and is not an applicable requirement.

Process Equipment Requirements: E-2 Process Line (Attic Vent/Roll Stock)

1. **Limitations** – The throughput of VOC to the E-2 line shall not exceed 66.25 lbs/hr and 69.1 tons per year, calculated monthly as the sum of each consecutive 12-month period. VOC throughput shall be calculated as:

$$E_t = \left(\sum_{i=1}^{n} C_i B_i \right)$$

Where:

E_t = VOC throughput rate (lb/time period)

C_i = percentage of VOC in each blowing agent utilized during the time period (expressed as a weight fraction)

B_i = weight of each blowing agent utilized during the time period (pounds/time)

n = number of blowing agents

Average hourly throughput shall be calculated once each 24-hour period. Compliance with the annual VOC throughput shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

(9 VAC 5-80-110 and Condition 25 of 6/01/2017 Permit)

2. **Limitations** – VOC emissions from the E-2 line shall not exceed the following limits:

Process Emissions (E-2)	27.4 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 1 and 3.

(9 VAC 5-80-110 and Condition 26 of 6/01/2017 Permit)

3. **Limitations** – Annual Process VOC emissions from the E-2 line shall be calculated by mass balance as specified in the formulas below:

$$V_{PR} = V_{PR1} + V_{PR2}$$

Where:

V_{PR} = Process VOC emission rate (tons/month) from the E-2 line

V_{PR1} = VOC emissions from RTO (tons/month) from the E-2 line

V_{PR2} = Uncontrolled VOC emission (tons/month) from the E-2 line

$$V_{PR1} = (1 - OCE)\sum_{i=1}^{n} V_{TPUTRTO}$$

Where:

$V_{TPUTRTO}$ = VOC throughput to RTO (tons/month)

OCE = Overall Control Efficiency expressed as a fraction

$$V_{TPUTRTO} = (\sum_{i=1}^{n} v * SP) - HE_{E2}$$

Where:

SP = Scrap production from the E-2 line (extrusion and thermoforming) (tons/month)

v = percentage of VOC retained in finished product expressed as a weight fraction

HE_{E2} = Hopper emissions from the hoppers (ES-56 and ES-57) over R-6 and R-2 (ES-53 and ES-55) associated with E-2 line scrap processing (tons/month) [calculated using VOC emission rate of 0.132 lb/hr multiplied by total run hours for Reclaim Extruders R-6 and R-2 during the month, and multiplied by the percent of scrap processed from Line E-2 during the month (as compared to the overall scrap processed on Reclaim Extruders R-6 and R-2)]

n = number of product family types

$$V_{PR2} = \sum_{i=1}^{n}\left[V_{TPUT2} - \left(v*G\right)\right] + HE_{E2}$$

Where:

V_{PR2} = Uncontrolled VOC emission from the E-2 line (tons/month)

V_{TPUT2} = VOC throughput that is not controlled by RTO (tons/month)

v = percentage of VOC retained in finished product expressed as a weight fraction

G = Finished product (tons/month)

HE_{E2} = [same as above]

n = number of product family types

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. VOC throughput to the RTO shall be calculated using methods approved by DEQ. The VOC emission rate from the hoppers (ES-56 and ES-57) over R-6 and R-2 (ES-53 and ES-55) shall be established by methodology as approved by DEQ. The percentage of VOC retained in finished products (v) shall be based on testing conducted pursuant to Condition 10. The most recent DEQ-approved test results for OCE, HE and v shall be used in emission calculations. The VOC emission rate for the HE calculation currently is 0.132 lb/hr.

(9 VAC 5-80-110 and Condition 27 of 6/01/2017 Permit)

4. **Limitations** – The production of laminated product shall not exceed 4,600 tons per year from extrusion laminator systems (ES-27, ES-28, and ES-28a), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

   (9 VAC 5-80-110 and Condition 29 of 6/01/2017 Permit)

5. **Limitations** – VOC emissions from the extrusion laminator systems (ES-27, ES-28, and ES-28a), shall not exceed 0.24 lbs/hr and 0.25 tons/yr, calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Condition 4.

   (9 VAC 5-80-110 and Condition 30 of 6/01/2017 Permit)

6. **Limitations** – Visible emissions from the foam extruder (ES-21), extrusion laminator stack (S27), reclaim extruder stack (S55), scrap storage bin vents (V56 and V57) and fluff storage silo vents (V42 - V46, V48, V49, and V64 – V66) shall not exceed 20 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity. This condition applies at all times except during startup, shutdown and malfunction.
   (9 VAC 5-80-110 and 9 VAC 5-50-80)

7. **Limitations** – Particulate emissions from the foam extruder (ES-21), extrusion laminator stack (S27), reclaim extruder stack (S55), scrap storage bin vents (V56 and V57) and fluff storage silo vent (V42 - V46, V48, V49, and V64 – V66) shall not exceed the process weight limit as determined by the following equation:

$$E = 4.10P^{0.67}$$

   where:

E = emission rate in lb/hr
P = process weight rate in tons/hr

(9 VAC 5-80-110 and 9 VAC 5-40-260)

8. **Periodic Monitoring** – The permittee shall install, calibrate, maintain, and operate a flow meter to continuously measure the blowing agent input rate to the E-2 line. The permittee shall record the blowing agent input rate with a frequency of not less than once per 24-hour period. The flow meter shall be provided with adequate access for inspection and shall be in operation when the corresponding line is operating.
(9 VAC 5-80-110 and Condition 10 of 6/01/2017 Permit)

9. **Recordkeeping** – The permittee shall maintain records of all emissions data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with DEQ. These records shall include, but are not limited to:

   a. Monthly material throughput, in pounds, for the E-2 line.

   b. Results of performance testing of the percentage of VOC retained in finished product (v) and Warehouse VOC Loss Rate (V_{WRE}) for each product family type manufactured on the E-2 line.

   c. Monthly and annual throughput of blowing agent VOC (in tons) for the E-2 line, as required by Condition 1.

   d. Average hourly throughput of blowing agent VOC (in pounds) for the E-2 line, as required by Condition 1.

   e. Monthly and annual Process VOC emissions (in tons) from the E-2 line, as required by Conditions 2 and 3.

   f. Monthly and annual uncontrolled VOC emissions (in tons) from the E-2 line.

   g. Monthly and annual finished product (tons) from the E-2 line.

   h. Monthly and annual throughput of laminate products from the extrusion laminator systems (ES-27, ES-28, and ES-28a), as required by Condition 4.

   i. Monthly and annual VOC emissions (in tons) from the extrusion laminator systems (ES-27, ES-28, and ES-28a), as required by Condition 5.

   j. Calibration of the monitoring device for the flow meter, as required by Condition 8.

   k. Results of all visible emissions evaluations, stack tests, VOC product retention tests, and the Warehouse VOC loss performance tests.

These records shall be available on site for inspection by DEQ and shall be current for the most recent five years.
(9 VAC 5-80-110 and Condition 61 of 6/01/2017 Permit)

10. **Testing** – During the term of this permit, performance tests shall be conducted at least once to determine the percentage of VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (V_{WRE}) for each product family type to be used in Condition 3 to calculate VOC emissions from the E-2 line. The permittee shall submit a test protocol at least 30 days prior to testing. The protocol shall include detailed information on testing including selection of product families. One copy of the test results shall be submitted to DEQ, within 60 days after test completion.
(9 VAC 5-80-110 and Condition 60 of the 6/01/2017 Permit)

11. **Testing** – If testing is conducted in addition to the monitoring specified in this permit, the permittee shall use the appropriate method(s) in accordance with procedures approved by DEQ.
(9 VAC 5-80-110)

Process Equipment Requirements: E-4 Process Line (Underlayment)

12. **Limitations** – The throughput of VOC to the E-4 line shall not exceed 119.0 lbs/hr and 195.9 tons per year, calculated monthly as the sum of each consecutive 12-month period. VOC throughput shall be calculated as:

$$E_t = \left(\sum_{i=1}^{n} C_i B_i \right)$$

Where:

E_t = VOC throughput rate (lb/time period)

C_i = percentage of VOC in each blowing agent utilized during the time period (expressed as a weight fraction)

B_i = weight of each blowing agent utilized during the time period (pounds/time)

n = number of blowing agents

Average hourly throughput shall be calculated once each 24-hour period. Compliance with the annual VOC throughput shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

(9 VAC 5-80-110 and Condition 31 of 6/01/2017 Permit)

13. **Limitations** – VOC emissions from the E-4 line shall not exceed the following limits:

Process Emissions (E-4)	49.0 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 12 and 14.

(9 VAC 5-80-110 and Condition 32 of 6/01/2017 Permit)

14. **Limitations** – Annual Process VOC emissions from the E-4 line shall be calculated by mass balance as specified in the formulas below:

$$V_{PR} = V_{PR1} + V_{PR2}$$

Where:

V_{PR} = Process VOC emission rate (tons/month) from the E-4 line

V_{PR1} = VOC emissions from RTO (tons/month) from the E-4 line

V_{PR2} = Uncontrolled VOC emission (tons/month) from the E-4 line

$$V_{PR1} = (1 - OCE)\sum_{i=1}^{n} V_{TPUTRTO}$$

Where:

$V_{TPUTRTO}$ = VOC throughput to RTO (tons/month)

OCE = Overall Control Efficiency expressed as a fraction

$$V_{TPUTRTO} = (\sum_{i=1}^{n} v * SP) - HE_{E4}$$

Where:

SP = Scrap production from the E-4 line (extrusion and thermoforming) (tons/month)

v = percentage of VOC retained in finished product expressed as a weight fraction

HE_{E4} = Hopper emissions from hoppers (ES-56 and ES-57) over R-6 and R-2 (ES-53 and ES-55) associated with E-4 line scrap processing (tons/month) [calculated using VOC emission rate of 0.132 lb/hr multiplied by total run hours for Reclaim Extruders R-6 and R-2 during the month, and multiplied by the percent of scrap processed from the E-4 line during the month (as compared to the overall scrap processed on Reclaim Extruders R-6 and R-2)]

n = number of product family types

$$V_{PR2} = \sum_{i=1}^{n}\left[V_{TPUT2} - \left(v*G\right)\right] + HE_{E4}$$

Where:

V_{PR2} = Uncontrolled VOC emission from the E-4 line (tons/month)

V_{TPUT2} = VOC throughput that is not controlled by RTO (tons/month)

v = percentage of VOC retained in finished product expressed as a weight fraction

G = Finished product (tons/month)

HE_{E4} = [same as above]

n = number of product family types

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. VOC throughput to the RTO shall be calculated using methods approved by DEQ. The VOC emission rate from the hoppers (ES-56 and ES-57) over R-6 and R-2 (ES-53 and ES-55) shall be established by methodology as approved by DEQ. The percentage of VOC retained in finished products (v) shall be based on testing conducted pursuant to Condition 21. The most recent DEQ-approved test results for OCE, HE, and v shall be used in emission calculations. The VOC emission rate for the HE calculation currently is 0.132 lb/hr.

(9 VAC 5-80-110 and Condition 33 of 6/01/2017 Permit)

15. **Limitations** – The production of laminated product shall not exceed 4,600 tons per year from extrusion laminator systems (ES-29, ES-29a, ES-30, and ES-30a), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

    (9 VAC 5-80-110 and Condition 35 of 6/01/2017 Permit)

16. **Limitations** – VOC emissions from the extrusion laminator systems (ES-29, ES-29a, ES-30, and ES-30a), shall not exceed 0.26 lbs/hr and 0.48 tons/yr, calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Condition 15.

    (9 VAC 5-80-110 and Condition 36 of 6/01/2017 Permit)

17. **Limitations** – Visible emissions from the foam extruder (ES-22), extrusion laminator stack (S29), reclaim extruder stack (S55), scrap storage bin vents (V56 and V57) and fluff storage silo vents (V42 – V46, V48, V49, and V64 – V66) shall not exceed 20 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity. This condition applies at all times except during startup, shutdown and malfunction.
    (9 VAC 5-80-110 and 9 VAC 5-50-80)

18. **Limitations** – Particulate emissions from the foam extruder (ES-22), extrusion laminator stack (S29), reclaim extruder stack (S55), scrap storage bin vents (V56 and V57) and fluff storage silo vents (V42 – V46, V48, V49, and V64 – V66) shall not exceed the process weight limit as determined by the following equation:

$$E = 4.10P^{0.67}$$

    Where:

    E = emission rate in lb/hr
    P = process weight rate in tons/hr

    (9 VAC 5-80-110 and 9 VAC 5-40-260)

19. **Periodic Monitoring** – The permittee shall install, calibrate, maintain, and operate a flow meter to continuously measure the blowing agent input rate to the E-4 line. The permittee shall record the blowing agent input rate with a frequency of not less than once per 24-hour period. Each flow meter shall be provided with adequate access for inspection and shall be in operation when the corresponding line is operating.
(9 VAC 5-80-110 and Condition 10 of 6/01/2017 Permit)

20. **Recordkeeping** – The permittee shall maintain records of all emissions data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with DEQ. These records shall include, but are not limited to:

    a. Monthly material throughput, in pounds, for the E-4 line.

    b. Results of performance testing of the percentage of VOC retained in finished product (v) and Warehouse VOC Loss rate (V_{WRE}) for each product family type manufactured on the E-4 line.

    c. Monthly and annual throughput of blowing agent VOC (in tons) for the E-4 line, as required by Condition 12.

    d. Average hourly throughput of blowing agent VOC (in pounds) for the E-4 line, as required by Condition 12.

    e. Monthly and annual Process VOC emissions (in tons) from the E-4 line, as required by Conditions 13 and 14.

    f. Monthly and annual uncontrolled VOC emissions (in tons) from the E-4 line.

    g. Monthly and annual finished product (tons) from the E-4 line.

    h. Monthly and annual throughput of laminate products from the extrusion laminator system (ES-29, ES-29a, ES-30, and ES-30a), as required by Condition 15.

    i. Monthly and annual VOC emissions (in tons) from the extrusion laminator system (ES-29, ES-29a, ES-30, and ES-30a), as required by Condition 16.

    j. Calibration of the monitoring device for the flow meter as required in Condition 19.

    k. Results of all visible emissions evaluations, stack tests, VOC product retention tests, and the Warehouse VOC loss performance tests.

    These records shall be available on site for inspection by DEQ and shall be current for the most recent five years.
    (9 VAC 5-80-110 and Condition 61 of 6/01/2017 Permit)

21. **Testing** – During the term of this permit, performance tests shall be conducted at least once to determine the percentage of VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (V_{WRE}) for each product family type to be used in Condition 14 to calculate VOC emissions from the E-4 line. The permittee shall submit a test protocol at least 30 days prior to testing. The protocol shall include detailed information on testing including selection of product families. One copy of the test results shall be submitted to DEQ, within 60 days after test completion.

    (9 VAC 5-80-110 and Condition 60 of the 6/01/2017 Permit)

22. **Testing** – If testing is conducted in addition to the monitoring specified in this permit, the permittee shall use the appropriate method(s) in accordance with procedures approved by DEQ.

    (9 VAC 5-80-110)

Process Equipment Requirement: E-6 Process Line (Insulation Board)

23. **Limitations** – The throughput of blowing agent VOC to the E-6 line shall not exceed 121.5 lb/hr and 226.7 tons per year. VOC throughput shall be calculated as:

$$E_t = \left(\sum_{i=1}^{n} C_i B_i \right)$$

Where:

E_t = VOC throughput rate (lb/time period)

C_i = percentage of VOC in each blowing agent utilized during the time period (expressed as a weight fraction)

B_i = weight of each blowing agent utilized during the time period (pounds/time period)

n = number of blowing agents

a. Average hourly throughput shall be calculated once each 24-hour period.

b. Annual throughput shall be calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

(9 VAC 5-80-110 and Condition 11 of 6/01/2017 Permit)

24. **Limitations** – VOC emissions from the E-6 line shall not exceed the following limits:

Process Emissions (E-6)	10.9 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 23, 25, and 26.

(9 VAC 5-80-110 and Condition 12 of 6/01/2017 Permit)

25. **Limitations** – Process VOC emissions from the E-6 line shall be calculated by mass balance as specified by the formula below:

$$V_{PR}' = \sum_{i=1}^{n} \left[V_{TPUTi} - \left(v_i * G \right) \right]$$

Where:

V_{PR}	=	Process VOC emission rate from the E-6 line (tons/month)
V_{TPUT}	=	Amount of VOC (blowing agent) used (tons/month)
v_i	=	percentage of VOC retained in finished product expressed as a weight fraction; i = retention data for methanol and non-methanol VOC
G	=	Gross Extruded Foam (tons/month)
n	=	number of product family types

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

The percentage of VOC retained in finished products (v) shall be as established in the Source Test Report Insulation Board (IB) Line (E-6) Product Family VOC Retention and Warehouse Loss Rate Testing report dated June 7, 2016, and approved by DEQ on July 19, 2016, or as established in a more recent testing report that has been approved by DEQ.
(9 VAC 5-80-110 and Condition 13 of 6/01/2017 Permit)

26. **Limitations** – The throughput of virgin polystyrene resin to the E-6 line shall not exceed 20,060 tons per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
(9 VAC 5-80-110 and Condition 15 of 6/01/2017 Permit)

27. **Limitations** – Particulate emissions from material handling including polystyrene storage silos (ES-1, ES-2, ES-3, ES-4, ES-9, ES-10, ES-14, ES-47, ES-59, ES-60a and ES-60b) and vacuum transfer blower systems (ES-17 and ES-18), shall not exceed the following limits:

PM	0.68 lbs/hr	0.58 tons/yr
PM-10	0.06 lbs/hr	0.08 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from

operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Condition 26.

(9 VAC 5-80-110 and Condition 16 of 6/01/2017 Permit)

28. **Limitations** – Visible emissions from the foam extruder (ES-24), extrusion laminator (S25) and reclaim extruder stack (S52) shall not exceed 10 percent opacity as determined by 40 CFR 60, Appendix A, Method 9.

(9 VAC 5-80-110, 9 VAC 5-50-80, and Condition 17 of 6/01/2017 Permit)

29. **Limitations** – Particulate emissions from the foam extruder (ES-24), extrusion laminator stack (S25), and reclaim extruder stack (S52) shall not exceed the process weight limit as determined by the following equation:

$$E = 4.10P^{0.67}$$

where:

E = emission rate in lb/hr
P = process weight rate in tons/hr

(9 VAC 5-80-110 and 9 VAC 5-40-260)

30. **Periodic Monitoring** – The permittee shall install, calibrate, maintain, and operate a flow meter to continuously measure the blowing agent input rate to the E-6 line. The permittee shall record the blowing agent input rate with a frequency of not less than once per 24-hour period. The flow meter shall be provided with adequate access for inspection and shall be in operation when the corresponding line is operating.

(9 VAC 5-80-110 and Condition 10 of 6/01/2017 Permit)

31. **Recordkeeping** – The permittee shall maintain records of all emissions data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with DEQ. These records shall include, but are not limited to:

    a. Monthly material throughput, in pounds, for the E-6 line.

    b. Results of performance testing of the percentage of VOC retained in finished product (v) and Warehouse VOC Loss Rate (V_{WRE}) for each product family type manufactured on the E-6 line.

    c. Monthly and annual throughput of blowing agent VOC (in tons) for the E-6 line, as required by Condition 23.

d. Average hourly throughput of blowing agent VOC (in pounds) for the E-6 line, as required by Condition 23.

e. Monthly and annual Process VOC emissions (in tons) from the E-6 line, as required by Conditions 24 and 25.

f. Monthly and annual finished product (tons) from the E-6 line.

g. Monthly and annual throughput of virgin polystyrene resin to the E-6 line.

h. Particulate emission calculations from material handling on the E-6 line, including polystyrene storage silos (ES-1, ES-2, ES-3, ES-4, ES-9, ES-10, ES-14, ES-47, ES-59, ES-60a, and ES-60b) and vacuum transfer blower systems (ES-17 and ES-18) using methods approved by DEQ to verify compliance with the lbs/hr and ton/yr emissions limitations in Condition 27.

i. Calibration of the monitoring device for the flow meter, as required by Condition 30.

j. Results of all visible emissions evaluations, stack tests, VOC product retention tests, and the Warehouse VOC loss performance tests.

These records shall be available on site for inspection by DEQ and shall be current for the most recent five years.
(9 VAC 5-80-110, Condition 61 of 6/01/2017 Permit)

32. **Testing** – During the term of this permit, performance tests shall be conducted at least once to determine the percentage of VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (V_{WRE}) for each product family type to be used in Condition 25 to calculate VOC emissions from the E-6 line. The permittee shall submit a test protocol at least 30 days prior to testing. The protocol shall include detailed information on testing including selection of product families. One copy of the test results shall be submitted to DEQ, within 60 days after test completion.
(9 VAC 5-80-110 and Condition 60 of 6/01/2017 Permit)

33. **Testing** – If testing is conducted in addition to the monitoring specified in this permit, the permittee shall use the appropriate method(s) in accordance with procedures approved by DEQ.
(9 VAC 5-80-110)

Process Equipment Requirement: E-7 Process Line (Insulation Board)

34. **Limitations** – The throughput of blowing agent VOC to the E-7 line shall not exceed 105.0 lb/hr and 74.4 tons per year. VOC throughput shall be calculated as:

$$E_t = \left(\sum_{i=1}^{n} C_i B_i \right)$$

Where:

E_t = VOC throughput rate (lb/time period)

C_i = percentage of VOC in each blowing agent utilized during the time period (expressed as a weight fraction)

B_i = weight of each blowing agent utilized during the time period (pounds/time period)

n = number of blowing agents

a. Average hourly throughput shall be calculated once each 24-hour period.

b. Annual throughput shall be calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

(9 VAC 5-80-110 and Condition 18 of 6/01/2017 Permit)

35. **Limitations** – VOC emissions from the E-7 line shall not exceed the following limits:

Process Emissions (E-7)	7.0 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 34, 36, and 37.

(9 VAC 5-80-110 and Condition 19 of 6/01/2017 Permit)

36. **Limitations** – Process VOC emissions from the E-7 line shall be calculated by mass balance as specified by the formula below:

$$V_{PR} = \sum_{i=1}^{n} \left[V_{TPUTi} - \left(v_i * G \right) \right]$$

Where:

V_{PR}	=	Process VOC emission rate from the E-7 line (tons/month)
V_{TPUT}	=	Amount of VOC (blowing agent) used (tons/month)
v_i	=	percentage of VOC retained in finished product expressed as a weight fraction; i = retention data for methanol and non-methanol VOC
G	=	Gross Extruded Foam (tons/month)
n	=	number of product family types

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

The percentage of VOC retained in finished products (v) shall be as established in the Source Test Report Insulation Board (IB) Line (E-6) Product Family VOC Retention and Warehouse Loss Rate Testing report dated June 7, 2016, and approved by DEQ on July 19, 2016, or as established in a more recent testing report that has been approved by DEQ.
(9 VAC 5-80-110 and Condition 20 of 6/01/2017 Permit)

37. **Limitations** – The throughput of virgin polystyrene resin to the E-7 line (ES-129) shall not exceed 13,638 tons per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
(9 VAC 5-80-110 and Condition 22 of 6/01/2017 Permit)

38. **Limitations** – Particulate emissions from material handling including polystyrene storage silos (ES-1, ES-2, ES-3, ES-4, ES-9, ES-10, ES-14, ES-47, ES-59, ES-60a and ES-60b) and vacuum transfer blower systems (ES-133 and ES-134), shall not exceed the following limits:

PM	0.67 lbs/hr	0.44 tons/yr
PM-10	0.05 lbs/hr	0.06 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from

operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Condition 37.

(9 VAC 5-80-110 and Condition 23 of 6/01/2017 Permit)

39. **Limitations** – Visible emissions from the foam extruder (ES-129), extrusion laminator (S25) and reclaim extruder stack (S130) shall not exceed 10 percent opacity as determined by 40 CFR 60, Appendix A, Method 9.

(9 VAC 5-80-110, 9 VAC 5-50-80, and Condition 24 of 6/01/2017 Permit)

40. **Limitations** – Particulate emissions from the foam extruder (ES-129), extrusion laminator stack (S25), and reclaim extruder stack (S130) shall not exceed the process weight limit as determined by the following equation:

$$E = 4.10P^{0.67}$$

where:

E = emission rate in lb/hr
P = process weight rate in tons/hr

(9 VAC 5-80-110 and 9 VAC 5-40-260)

41. **Periodic Monitoring** – The permittee shall install, calibrate, maintain, and operate a flow meter to continuously measure the blowing agent input rate to the E-7 line. The permittee shall record the blowing agent input rate with a frequency of not less than once per 24-hour period. The flow meter shall be provided with adequate access for inspection and shall be in operation when the corresponding line is operating.

(9 VAC 5-80-110 and Condition 10 of 6/01/2017 Permit)

42. **Recordkeeping** – The permittee shall maintain records of all emissions data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with DEQ. These records shall include, but are not limited to:

    a. Monthly material throughput, in pounds, for the E-7 line.

    b. Results of performance testing of the percentage of VOC retained in finished product (v) and Warehouse VOC Loss Rate (V_{WRE}) for each product family type manufactured on the E-7 line.

    c. Monthly and annual throughput of blowing agent VOC (in tons) for the E-7 line, as required by Condition 34.

d. Average hourly throughput of blowing agent VOC (in pounds) for the E-7 line, as required by Condition 34.

e. Monthly and annual Process VOC emissions (in tons) from the E-7 line, as required by Conditions 35 and 36.

f. Monthly and annual finished product (tons) from the E-7 line.

g. Monthly and annual throughput of virgin polystyrene resin to the E-7 line.

h. Particulate emission calculations from material handling on the E-7 line, including polystyrene storage silos (ES-1, ES-2, ES-3, ES-4, ES-9, ES-10, ES-14, ES-47, ES-59, ES-60a, and ES-60b) and vacuum transfer blower systems (ES-133 and ES-134)) using methods approved by DEQ to verify compliance with the lbs/hr and ton/yr emissions limitations in Condition 38.

i. Calibration of the monitoring device for the flow meter, as required by Condition 41.

j. Results of all visible emissions evaluations, stack tests, VOC product retention tests, and the Warehouse VOC loss performance tests.

These records shall be available on site for inspection by DEQ and shall be current for the most recent five years.
(9 VAC 5-80-110, Condition 61 of 6/01/2017 Permit)

43. **Testing** – Initial performance tests shall be conducted on the E-7 line to determine the percentage of methanol and non-methanol VOC retained in the finished product (v) and the Warehouse VOC Loss Rate (VWRE) for each product family type. The tests shall be performed and reported within 90 days after achieving the maximum production rate at which the E-7 line will be operated, but in no event later than 180 days after start-up of the E-7 line. The testing protocol must be approved by DEQ before conducting the testing.
(9 VAC 5-80-110 and Condition 58 of 6/01/2017 Permit)

44. **Testing** – If testing is conducted in addition to the monitoring specified in this permit, the permittee shall use the appropriate method(s) in accordance with procedures approved by DEQ.
(9 VAC 5-80-110)

Insulation Board Reclaim (IBR) Operating/Emission Limitations

45. **Throughput: Insulation Board Reclaim Extruders (R-4/R-7)** – The production of reclaim polystyrene pellets (RPP) shall not exceed 19,272 tons per year from the two reclaim extruders serving the E-6 and E-7 Lines (R-4 and R-7) (ES-52 and ES-130), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
(9 VAC 5-80-110 and Condition 37 of 6/01/2017 Permit)

46. **Emission Limits: Insulation Board Reclaim Extruders (R-4/R-7)** – Blowing agent VOC emissions from the IBR process shall not exceed the following limits:

VOC	102.7 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissons are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered creditable evidence of exceedance of the emission limits. Compliance with these emissions limits may be determined as stated in Condition 47.
(9 VAC 5-80-110 and Condition 38 of 6/01/2017 Permit)

47. **Emission Limits: Insulation Board Reclaim Extruders (R-4/R-7)** – Blowing agent VOC emissions from the IBR process shall be calculated by mass balance as specified by the formula below:

$$V_{REC} = \sum_{i=1}^{n} \left[V_{TPUTi} - \left(v_i * G \right) \right]$$

Where:

V_{REC}	=	Reclaim VOC emission rate (tons/month)
V_{TPUT}	=	Amount of VOC (blowing agent) used (tons/month)
v_i	=	percentage of VOC retained in finished product expressed as a weight fraction; i = retention data for methanol and non-methanol VOC
G	=	Gross Extruded Foam (tons/month)
n	=	number of product family types

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by

adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

The percentage of VOC retained in finished products (v) shall be as established in the Source Test Report Insulation Board (IB) Line (E-6) Product Family VOC Retention and Warehouse Loss Rate Testing report dated June 7, 2016, and approved by DEQ on July 19, 2016, or as established in a more recent testing report that has been approved by DEQ.
(9 VAC 5-80-110 and Condition 39 of 6/01/2017 Permit)

48. **Emission Limits: Insulation Board Reclaim Extruders (R-4/R-7)** – Non-blowing agent VOC emissions from reclaim extruders R-4 and R-7 (ES-52 and ES-130) shall not exceed 0.46 lb/hr and 2.02 tons/yr, calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emissions limits. Compliance with these emission limits may be determined as stated in Condition 45.
(9 VAC 5-80-110 and Condition 40 of 6/01/2017 Permit)

49. **Limitations** – Particulate emissions from each fluff storage silo (ES-50, ES-128, and ES-131) shall be controlled by a fabric filter. Each fabric filter shall be provided with adequate access for inspection.
(9 VAC 5-80-110 and Condition 4 of 6/01/2017 Permit)

50. **Visible Emission Limit** – Visible emissions from the fluff storage silo (ES-50, ES-128, and ES-131) shall not exceed five percent opacity as determined by 40 CFR 60, Appendix A, Method 9.
(9 VAC 5-80-110, 9 VAC 5-50-80, and Condition 41 of 6/01/2017 Permit)

51. **Periodic Monitoring** – The fabric filters (C50, C128, and C131) shall be equipped with a device to continuously measure the differential pressure drop across the fabric filter. The monitoring device shall be installed, maintained, calibrated, and operated in accordance with approved procedures which shall include, at a minimum, the manufacturer's written requirements or recommendations. The monitoring device shall be provided with adequate access for inspection and shall be in operation when the fabric filter is operating.
(9 VAC 5-80-110 and Condition 8 of 6/01/2017 Permit)

52. **Periodic Monitoring** – The control monitoring devices used to continuously measure the differential pressure drop across the fabric filters (C50, C128, and C131) shall be observed by the permittee with a frequency of not less than once per week. The permittee shall keep a log of the observations from the control monitoring devices.
(9 VAC 5-80-110 and Condition 9 of 6/01/2017 Permit)

53. **Periodic Monitoring** – The permittee shall perform weekly inspections of the fluff storage silo vents (V50, V128, and V131). Each inspection shall include an observation of the presence of visible emissions and the pressure drop across the fabric filters (C50, C128, and C131). If during the inspection visible emissions are observed, a VEE of the stack shall be

conducted in accordance with 40 CFR 60, Appendix A, Method 9, unless timely corrective action is taken such that the fabric filter resumes operation with no visible emissions. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed five percent, the VEE shall be conducted for a total of 60 minutes. All observations, VEE results, and corrective actions taken shall be recorded.
(9 VAC 5-80-110)

54. **Recordkeeping** – The permittee shall maintain records of all emissions data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with DEQ. These records shall include, but are not limited to:

    a. Monthly and annual scrap production (tons) from the E-6 and E-7 lines.

    b. Monthly and annual throughput of reclaim polystyrene pellets (RPP) from reclaim extruders R-4 and R-7 (ES-52 and ES-130), as required by Condition 45.

    c. Monthly and annual VOC emissions (in tons) from reclaim extruders R-4 and R-7 (ES-52 and ES-130), as required by Conditions 46, 47, and 48.

    d. Operation and control device monitoring records for the fabric filters (C50, C128, and C131), as required by Condition 52.

    e. Inspection records as required by Condition 53, including the date and time of the inspections and corrective action(s) taken.

    These records shall be available on site for inspection by DEQ and shall be current for the most recent five years.
    (9 VAC 5-80-110 and Condition 61 of 6/01/2017 Permit)

Non-Insulation Board Reclaim (NIBR) Operating/Emission Limitations

55. **Throughput: NIBR Reclaim Extruders (R-2/R-6)** – The production of reclaim polystyrene pellets (RPP) shall not exceed 6,570 tons per year from the two reclaim extruders serving the E-2 and E-4 Lines (R-2 and R-6) (ES-55 and ES-53), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
(9 VAC 5-80-110 and Condition 42 of 6/01/2017 Permit)

56. **Emission Limits: NIBR Reclaim Extruders (R-2/R-6)** – Blowing agent VOC emissions from the NIBR process shall not exceed the following limits:

VOC	2.0 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered creditable evidence of exceedance of the emission limits. Compliance with these emissions limits may be determined as stated in Condition 57.
(9 VAC 5-80-110 and Condition 43 of 6/01/2017 Permit)

57. **Emission Limits: NIBR Reclaim Extruders (R-2/R-6)** – Blowing agent VOC emissions from the NIBR process shall be calculated by mass balance as specified by the formula below:

$$V_{RECE2E4} = (1 - OCE)\sum_{i=1}^{n} V_{TPUTRTOE2E4}$$

Where:

$V_{RECE2E4}$ = VOC emissions from RTO (tons/month) from scrap associated with the E-2 and E-4 lines

$V_{TPUTRTO\ E2E4}$ = VOC throughput to RTO from scrap associated with the E-2 and E-4 Lines (tons/month)

OCE = Overall Control Efficiency expressed in mass as a weight fraction

$$V_{TPUTRTO} = (\sum_{i=1}^{n} v * SP)$$

Where:

SP = Scrap production from the E-2 and E-4 lines (tons/month)

v = percentage of VOC retained in finished product expressed as a weight fraction

n = number of product family types

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

The percentage of VOC retained in finished products (v) shall be as established in the Source Test Report – Project ECO – VOC Retention and Warehouse Loss Rate Testing, dated August 12, 2011, and approved by DEQ on August 26, 2011, or as established in a more recent testing report that has been approved by DEQ.
(9 VAC 5-80-110 and Condition 44 of 6/01/2017 Permit)

58. **Emission Limits: NIBR Reclaim Extruders (R-2/R-6)** – Non-blowing agent VOC emissions from reclaim extruders R-2 and R-6 (ES-55 and ES-53) from processing of scrap produced on lines E-2 and E-4 shall not exceed 0.16 lb/hr and 0.69 tons/yr, calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emissions limits. Compliance with these emission limits may be determined as stated in Condition 55.
(9 VAC 5-80-110 and Condition 45 of 6/01/2017 Permit)

59. **Limitations** – Particulate emissions from each fluff storage silo (ES-42 – ES-46, ES-48, ES-49, and ES-64 – ES-66) and scrap storage bins (ES-56 and ES-57) shall be controlled by a fabric filter. Each fabric filter shall be provided with adequate access for inspection.
(9 VAC 5-80-110)

60. **Limitations** – VOC emissions from each fluff storage silo (ES-42 - ES-46, ES-48, ES-49, and ES-64 – ES-66) and reclaim extruders R-6 and R-2 (ES-53 and ES-55) shall be controlled by an RTO (ES-75) with a destruction efficiency of not less than 95.0 percent. The RTO shall be provided with adequate access for inspection. All scrap generated from the E-2 line shall be processed by the R-6 or R-2 reclaim extruder (ES-53 or ES-55).
(9 VAC 5-80-110 and Condition 1 of 6/01/2017 Permit)

61. **Limitations** – Visible emissions from each fluff storage silo (ES-64 - ES-66) shall not exceed five percent opacity as determined by 40 CFR 60, Appendix A, Method 9.
(9 VAC 5-80-110 and Condition 48 of 6/01/2017 Permit)

62. **Limitations** – The RTO (ES-75) operating temperature in the center of the gravel bed (designated as TE-3) shall not be less than the minimum temperature determined during the latest performance testing to correspond to a destruction efficiency of 95.0 percent or greater.
(9 VAC 5-80-110 and Condition 6 of 6/01/2017 Permit)

63. **Limitations** – The approved fuel for the RTO (ES-75) is natural gas. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-110 and Condition 46 of 6/01/2017 Permit)

64. **Limitations** – Visible emissions from the RTO (ES-75) shall not exceed five percent opacity except during periods of scheduled maintenance (such as bake-out periods) for the RTO (ES-75) when visible emissions shall not exceed 20 percent opacity. This condition applies at all times except during startup, shutdown, and malfunction. Opacity shall be determined by 40 CFR 60, Appendix A, Method 9.
(9 VAC 5-80-110 and Condition 47 of 6/01/2017 Permit)

65. **Periodic Monitoring** – Each fabric filter (C42 – C46, C48, C49, C56, C57, and C64 – C66) shall be equipped with a device to continuously measure the differential pressure drop across the fabric filter. The monitoring device shall be installed, maintained, calibrated, and operated in accordance with approved procedures which shall include, at a minimum, the manufacturer's written requirements or recommendations. The monitoring device shall be provided with adequate access for inspection and shall be in operation when the fabric filter is operating.
(9 VAC 5-80-110 and Condition 8 of 6/01/2017 Permit)

66. **Periodic Monitoring** – The control monitoring devices used to continuously measure the differential pressure drop across the fabric filters (C42 – C46, C48, C49, C56, C57, and C64 – C66) shall be observed by the permittee with a frequency of not less than once per week. The permittee shall keep a log of the observations from the control monitoring devices.
(9 VAC 5-80-110 and Condition 9 of 6/01/2017 Permit)

67. **Periodic Monitoring** – The permittee shall perform weekly inspections of each fluff storage silo vent (V42 – V46, V48, V49, and V64 – V66) and scrap storage bin vents (V56 and V57). Each inspection shall include an observation of the presence of visible emissions and the pressure drop across each fabric filter (C42 – C46, C48, C49, C56, C57, and C64 – C66). If during the inspection visible emissions are observed, a VEE of the stack shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9, unless timely corrective action is taken such that the fabric filter resumes operation with no visible emissions. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed 20 percent, the VEE shall be conducted for a total of 60 minutes. All observations, VEE results, and corrective actions taken shall be recorded.
(9 VAC 5-80-110)

68. **Compliance Assurance Monitoring (CAM)** – The RTO (ES-75) shall be equipped with a device to continuously measure and record the temperature at TE-3. The monitoring device for temperature shall be installed in an accessible location and calibrated, maintained, and operated according to the manufacturer's specifications. The calibration of the monitoring device shall be verified every six months.
(9 VAC 5-80-110 and Condition 7 of 6/01/2017 Permit)

69. **CAM** – The permittee shall monitor, operate, calibrate, and maintain the RTO (ES-75) controlling the NIBR process according to the parameters specified in the Compliance Assurance Monitoring (CAM) Plan for the Regenerative Thermal Oxidizer (RTO) (ES-75), which is included as Attachment B.
(9 VAC 5-80-110 E and 40 CFR 64.6)

70. **CAM** – The permittee shall conduct the monitoring and fulfill the other obligations specified in 40 CFR 64.7 through 40 CFR 64.9.
(9 VAC 5-80-110 E and 40 CFR 64.6 (c))

71. **CAM** – At all times, the permittee shall maintain the monitoring equipment, including, but not limited to, maintaining necessary parts for routine repairs of the monitoring equipment.
(9 VAC 5-80-110 E and 40 CFR 64.7 (b))

72. **CAM** – Except for, as applicable, monitoring malfunctions, associated repairs, and required quality assurance or control activities (including, as applicable, calibration checks and required zero and span adjustments), the permittee shall conduct all monitoring in continuous operation (or shall collect data at all required intervals) at all times that the NIBR process is operating. Data recorded during monitoring malfunctions, associated repairs, and required quality assurance or control activities shall not be used for purposes of compliance assurance monitoring, including data averages and calculations, or fulfilling a minimum data availability requirement, if applicable. The permittee shall use all the data collected during all other periods in assessing the operation of the control device and associated control system. A monitoring malfunction is any sudden, infrequent, not reasonably preventable failure of the monitoring equipment to provide valid data. Monitoring failures that are caused in part by inadequate maintenance or improper operation are not malfunctions.
(9 VAC 5-80-110 E and 40 CFR 64.7 (c))

73. **CAM** – Upon detecting an excursion or exceedance, the permittee shall restore operation of the NIBR process (including the control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions. The response shall include minimizing the period of any startup, shutdown, or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup and shutdown conditions). Such actions may include initial inspection and evaluation, recording that operations returned to normal without operator action (such as through response by a computerized distribution control system), or any necessary follow-up actions to return operation to within the indicator, designated condition, or below the applicable emission limitation or standard, as applicable.
(9 VAC 5-80-110 E and 40 CFR 64.7 (d)(1))

74. **CAM** – Determination that acceptable procedures were used in response to an excursion or exceedance will be based on information available, which may include but is not limited to, monitoring results, review of operation and maintenance procedures and records, and inspection of the control device, associated capture system, and the process.

(9 VAC 5-80-110 E and 40 CFR 64.7(d)(2))

75. **CAM** – If the permittee identifies a failure to achieve compliance with an emission limitation or standard for which the approved monitoring did not provide an indication of an excursion or exceedance while providing valid data, or the results of compliance or performance testing document a need to modify the existing indicator ranges or designated conditions, the permittee shall promptly notify DEQ and, if necessary, submit a proposed modification to this permit to address the necessary monitoring changes. Such a modification may include, but is not limited to, reestablishing indicator ranges or designated conditions, modifying the frequency of conducting monitoring and collecting data, or the monitoring of additional parameters.
(9 VAC 5-80-110 E and 40 CFR 64.7(e))

76. **CAM** – The permittee shall develop a Quality Improvement Plan (QIP) for the RTO (ES-75) if more than six excursions from the chamber temperature indicator range (Indicator 1) specified in the CAM Plan for the RTO (ES-75) (Attachment B) occur within a six-month reporting period, according to 40 CFR 64.8.
(9 VAC 5-80-110 and 40 CFR 64.8)

77. **Recordkeeping** – The permittee shall maintain records of all emissions data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with DEQ. These records shall include, but are not limited to:

    a. Monthly and annual scrap production (tons) from the E-2 and E-4 lines (extrusion and themoforming).

    b. Monthly and annual throughput of reclaim polystyrene pellets (RPP) from reclaim extruders R-2 and R-6 (ES-55 and ES-53), as required by Condition 55.

    c. Monthly and annual VOC emissions (in tons) from reclaim extruders R-2 and R-6 (ES-55 and ES-53), as required by Conditions 56, 57, and 58.

    d. Monthly and annual VOC input to the RTO (ES-75) from the E-2 and E-4 lines.

    e. Monthly and annual VOC emissions from the RTO (ES-75).

    f. Records of DEQ-approved test results for Hopper Emissions (HE) from the hoppers over R-6 and R-2 (ES-56 and ES-57).

    g. Operation and control device monitoring records for the fabric filters (C42 – C46, C48, C49, C56, C57, and C64 – C66), as required by Condition 66.

    h. Inspection records as required by Condition 67, including the date and time of the inspections and corrective action(s) taken.

These records shall be available on site for inspection by DEQ and shall be current for the most recent five years.
(9 VAC 5-80-110 and Condition 61 of 6/01/2017 Permit)

78. **Recordkeeping** – Documentation of monitoring required by the CAM Plan for the RTO (ES-75) (Attachment B), to include but not limited to:

    a. Measured temperature of the RTO (ES-75) at TE-3.

    b. Records of daily inspections of the supplemental fuel indicator valves and the annual inspection of the poppet valves.

    c. Method 25/25A stack test results.

    d. Records of all excursions, including date, time, and corrective actions taken.

    These records shall be available on site for inspection by DEQ and shall be current for the most recent five years.
    (9 VAC 5-80-110, 40 CFR 64.9, 9 VAC 5-50-50, and Condition 61 of 6/01/2017 Permit)

79. **Recordkeeping** – The permittee shall maintain records of monitoring data, monitor performance data, corrective actions taken, any written quality improvement plan (QIP) required pursuant to §64.8 and any activities undertaken to implement a QIP, and other supporting information required to be maintained under this part (such as data used to document the adequacy of monitoring, or records of monitoring maintenance or corrective actions). These records shall be available on site for inspection by DEQ and shall be current for the most recent five years.

    (9 VAC 5-80-110)

80. **Reporting** – The permittee shall submit CAM reports as part of the Title V semi-annual monitoring reports required by Condition 117 of this permit to DEQ. Such reports shall include at a minimum:

    a. Summary information on the number, duration, and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken;

    b. Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable); and

    c. A description of actions taken to implement a QIP during the reporting period as specified in 40 CFR 64.8. Upon completion of a QIP, the permittee shall include in the next summary report documentation that the plan has been completed and reduced the likelihood of similar levels of excursions or exceedances occurring.

    (9 VAC 5-80-110.F and 40 CFR 64.9(a))

Inside Warehouse Storage Operating/Emission Limitations

81. **Emission Limits: Inside Warehouse Storage** – Emissions from the Inside Warehouse Storage (ES-34 and ES-58) shall not exceed the following limits:

VOC	182.1 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered creditable evidence of exceedance of the emission limits. Compliance with these emissions limits may be determined as stated in Condition 82.
(9 VAC 5-80-110 and Condition 56 of 6/01/2017 Permit)

82. **Emission Limits: Inside Warehouse Storage** – VOC emissions from the Inside Warehouse Storage (ES-34 and ES-58) shall be calculated by mass balance as specified by the formula below:

$$V_{WH} = \sum_{i=1}^{n} v * G_w * V_{WRE} * T^{1/2}$$

Where:

V_{WH}	=	Inside Warehouse Storage VOC emissions rate (tons/month)
v	=	percentage of VOC retained in finished product expressed as a weight fraction
G_w	=	Finished product sent to the Inside Warehouse Storage (tons/month)
V_{WRE}	=	Warehouse VOC Loss Rate expressed as [(lb of VOC/(lb of VOC in Foam)]/(days)$^{1/2}$
T	=	Finished product inside warehouse storage time (days)
n	=	number of product family types

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months. The percentage of VOC retained in the finished products (v) and Warehouse VOC Loss Rate (V_{WRE}) for each type of product family shall be as established in the Source Test Report – Project ECO – VOC Retention and Warehouse Loss Rate Testing, dated August 12, 2011 and approved by DEQ on August 26, 2011, and the Source Test Report – Insulation Board (IB) Line (E6) Product Family – VOC Retention and Warehouse Loss Rate Testing, dated June 7, 2016, and approved by DEQ on July 19, 2016, or as established in a more recent testing report that has been approved by DEQ.
(9 VAC 5-80-110 and Condition 57 of 6/01/2017 Permit)

83. **Limitations** – The finished product sent to the inside warehouse storage area from the E-2 line shall not exceed 2,105 tons per year of foam finished product (excluding laminate/ laminate weight), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

    (9 VAC 5-80-110 and Condition 28 of 6/01/2017 Permit)

84. **Limitations** – The finished product sent to the inside warehouse storage area from the E-4 line shall not exceed 4,600 tons per year of foam finished product (excluding laminate/ laminate weight), calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

    (9 VAC 5-80-110 and Condition 34 of 6/01/2017 Permit)

85. **Limitations** – The finished product sent to the inside warehouse storage area from the E-6 line shall not exceed 10,030 tons per year of finished product. Annual throughput shall be calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

    (9 VAC 5-80-110 and Condition 14 of 6/01/2017 Permit)

86. **Limitations** – The finished product sent to the inside warehouse storage area from the E-7 line shall not exceed 9,547 tons per year of finished product. Annual throughput shall be calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

    (9 VAC 5-80-110 and Condition 21 of 6/01/2017 Permit)

87. **Recordkeeping** – The permittee shall maintain records of all emissions data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with DEQ. These records shall include, but are not limited to:

    a. Monthly and annual VOC emissions from the Inside Warehouse Storage, as required by Conditions 81 and 82.

    b. Monthly and annual finished product (in tons) sent to the inside warehouse storage area (ES-34 and ES-58) from each of the following lines: E-2, E-4, E-6, and E-7, recorded separately for each line, as required by Conditions 83 through 86.

c. Monthly and annual finished product (in tons) sent to the outside storage pad (ES-132) from each of the following lines: E-2, E-4, E-6, and E-7, recorded separately for each line.

d. Inside warehouse storage time for the finished product (in days) for each product family type from each of the following lines: E-2, E-4, E-6, and E-7, recorded separately for each line. Storage time shall be calculated using methods approved by DEQ.

These records shall be available on site for inspection by DEQ and shall be current for the most recent five years.
(9 VAC 5-80-110 and Condition 61 of 6/01/2017 Permit)

Facility-Wide Conditions

88. **Limitations** – VOC emissions from the flexographic printers (ES-67, ES-124, ES-116, ES-117, and ES-76) shall be controlled by the use of inks which meet the definition of low solvent ink, as applied and as stated in 9 VAC 5-40-5070 C.
(9 VAC 5-80-110, 9 VAC 5-40-5080 A, and Condition 49 of 6/01/2017 Permit)

89. **Limitations** – VOC emissions controls from cleanup, washup, and disposal shall include the following, or equivalent, as a minimum:

    a. VOC shall not be intentionally spilled, discarded to sewers, stored in open containers, or handled in any other manner that would result in evaporation beyond that consistent with air pollution control practices for minimizing practices.

    b. All VOC containing receptacles shall be closed at all times except during loading and unloading.

    c. VOC emissions shall be controlled by storing cleaning solutions and applicators in covered containers or machines with remote reservoirs when not in use.

    (9 VAC 5-80-110 and Condition 50 of 6/01/2017 Permit)

90. **Limitations** – The throughput of VOC to the flexographic printers shall be no more than the following amounts:

E-2 (ES-67)	1.0 tons/yr
E-4 (ES-117)	1.0 tons/yr
E-6 (ES-116)	1.0 tons/yr
Housewrap (ES-76)	1.5 tons/yr

    These throughputs shall be calculated monthly as the sum of each consecutive 12 month period.
    (9 VAC 5-80-110 and Condition 51 of 6/01/2017 Permit)

91. **Limitations** – The throughput of VOC to the flexographic printer for the E-7 line shall be no more than the following amount:

E-7 (ES-124)	0.8 tons/yr

    This throughput shall be calculated monthly as the sum of each consecutive 12 month period.
    (9 VAC 5-80-110 and Condition 52 of 6/01/2017 Permit)

92. **Limitations** – Emissions of VOC from the operation of the flexographic printers shall not exceed the limits specified below:

E-2 (ES-67)	1.0 tons/yr
E-4 (ES-117)	1.0 tons/yr
E-6 (ES-116)	1.0 tons/yr
Housewrap (ES-76)	1.5 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12 month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with this emission limit may be determined as stated in Condition 90.
(9 VAC 5-80-110 and Condition 53 of 6/01/2017 Permit)

93. **Limitations** – Emissions of VOC from the operation of the flexographic printer for the E-7 line shall not exceed the limit specified below:

E-7 (ES-124)	0.8 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12 month period. Compliance with this emission limit may be determined as stated in Condition 91.
(9 VAC 5-80-110 and Condition 54 of 6/01/2017 Permit)

94. **Limitations** – Visible emissions from the flexographic printers (ES-67, ES-124, ES-116, ES-117, and ES-76) shall not exceed 10 percent opacity as determined by 40 CFR 60, Appendix A, Method 9.
(9 VAC 5-80-110, 9 VAC 5-40-80 and Condition 55 of 6/01/2017 Permit)

95. **Limitations** – Except as specified in this permit, the flexographic printers (ES-67, ES-124, ES-116, ES-117, and ES-76) are to be operated in compliance with the federal requirements under 40 CFR 63, Subpart KK.
(9 VAC 5-80-110)

96. **Limitations** – Each blowing agent storage tank containing VOCs (ES-110, ES-114, ES-121, and ES-122) shall be equipped with a control method that will remove, destroy, or prevent the discharge into the atmosphere of at least 60 percent by weight of VOC emissions during the filling of the storage tank. Achievement of this emission standard shall be demonstrated using control methods in Condition 97.
(9 VAC 5-80-110, 9 VAC 5-40-3430 A, and Condition 2 of 6/01/2017 Permit)

97. **Limitations** – Each blowing agent storage tank containing VOCs (ES-110, ES-114, ES-121, and ES-122) shall be a pressure tank maintaining working pressure sufficient at all times to prevent vapor loss to the atmosphere, or be designed and equipped with one of the following vapor control systems:

a. Filling of the storage tank through the use of a submerged fill pipe.

b. Any system of equal or greater control efficiency to the system in Condition 97.a, provided such system is approved by DEQ.

(9 VAC 5-80-110, 9 VAC 5-40-3440 A, and Condition 3 of 6/01/2017 Permit)

98. **Limitations** – Visible emissions from each storage tank (ES-110, ES-114, ES-121, and ES-122) shall not exceed 20 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity as determined by 40 CFR 60, Appendix A, Method 9.
(9 VAC 5-80-110, 9 VAC 5-40-80, 9 VAC 5-50-80 and 9 VAC 5-40-3450)

99. **Limitations** – Except where this permit is more restrictive, blowing agent storage tank ES-110 and affiliated operations shall comply with the requirements of 40 CFR 63, Subpart EEEE (Organic Liquids Distribution (Non-Gasoline) NESHAP).
(9 VAC 5-80-110, 9 VAC 5-60-90, 9 VAC 5-60-100 and 40 CFR 63, Subpart EEEE)

100. **Limitations** – The diesel engines for the sprinkler system (ES-119 and ES-120) shall meet all requirements from 40 CFR 63, Subpart ZZZZ (NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE)), that are applicable to existing emergency stationary compression ignition (CI) RICE. This includes, but is not limited to, the following maintenance requirements specified in sections 1(a) through (c) of Table 2c to Subpart ZZZZ:

a. Change oil and filter every 500 hours of operation or annually, whichever comes first;

b. Inspect air cleaner every 1000 hours of operation or annually, whichever comes first; and

c. Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first.

(9 VAC 5-80-110, 9 VAC 5-60-90, 9 VAC 5-60-100, and 40 CFR 63, Subpart ZZZZ)

101. **Limitations** – The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to air pollution control equipment, monitoring devices, and process equipment which affect such emissions:

a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance.

b. Maintain an inventory of spare parts.

c. Have available written operating procedures for equipment. These procedures shall be based on the manufacturer's recommendations, at a minimum.

d. Train operators in the proper operation of all such equipment and familiarize the operators with the written operating procedures. The permittee shall maintain records of the training provided including the names of trainees, the date of training and the nature of the training.

(9 VAC 5-80-110 and Condition 67 of 6/01/2017 Permit)

102. **Monitoring and Recordkeeping** – The permittee shall develop a maintenance plan for the diesel engines for the sprinkler system (ES-119 and ES-120) that provides to the extent practicable for the maintenance and operation of each engine in a manner consistent with good air pollution control practice for minimizing emissions.

(9 VAC 5-80-110, 9 VAC 5-60-90, 9 VAC 5-60-100, and 40 CFR 63.6625(e))

103. **Monitoring and Recordkeeping** – The permittee shall maintain records of all emissions data and operating parameters necessary to demonstrate compliance with this permit. The content of and format of such records shall be arranged with DEQ. These records shall include, but are not limited to:

a. MSDS or VOC Data Sheets showing VOC content of each blowing agent used.

b. Monthly and annual throughput of VOC (in tons) to the flexographic printers (ES-67, ES-76, ES-124, ES-116, and ES-117), as required by Conditions 90 and 91.

c. Monthly and annual VOC emissions (in tons) for the flexographic printers (ES-67, ES-76, ES-124, ES-116, and ES-117), as required by Conditions 92 and 93.

d. Material Safety Data Sheets (MSDS) or other vendor information showing the VOC content, water content, and solids content of each material applied on the flexographic printers (ES-67, ES-124, ES-116, ES-117, and ES-76).

e. Records demonstrating the inks used in the flexographic printers (ES-67, ES-124, ES-116, ES-117, and ES-76) meet the definition of compliant ink in 9 VAC 5-40-5070.

f. The volatile organic compound stored in each blowing agent storage tank containing VOCs (ES-110, ES-114, ES-121, and ES-122) and its vapor pressure in pounds per square inch under actual storage and filling conditions.

g. Records certifying, including DEQ approval as appropriate, that the design and/or control method for each blowing agent storage tank containing VOCs (ES-110, ES-114, ES-121, and ES-122) meets the emission standard specified in Condition 96.

h. Records of the maintenance conducted on the diesel engines for the sprinkler system (ES-119 and ES-120) in order to demonstrate that each engine is operated and maintained according to maintenance requirements of Condition 100 and to the maintenance plan required by Condition 102.

i. Records of the hours of operation of the diesel engines for the sprinkler system (ES-119 and ES-120) that are recorded on a non-resettable hour meter. The permittee must document how many hours are spent for emergency operation, including what classified the operation as emergency, and how many hours are spent for non-emergency operation. If either engine is used for demand response operation, the permittee must keep records of the notification of the emergency situation, and the time each engine was operated as part of demand response.

j. Air pollution control equipment training provided and all scheduled and non-scheduled maintenance as required by Condition 101.

These records shall be available on site for inspection by DEQ and shall be current for the most recent five years.

(9 VAC 5-80-110, and Condition 61 of 6/01/2017 Permit)

104. **Testing** – The facility shall test, at the request of DEQ, to determine if inks used at the facility meet the definition of compliant ink as stated in 9 VAC 5-40-5070.
(9 VAC 5-80-110 and Condition 59 of 6/01/2017 Permit)

105. **Testing** – Upon request by the DEQ, the permittee shall conduct additional performance tests and/or visible emissions evaluations to demonstrate compliance with the emission limits and control efficiency requirements contained in this permit. The details of the tests shall be arranged with DEQ.
(9 VAC 5-80-110 and Condition 60 of 6/01/2017 Permit)

106. **Testing** – If testing is conducted in addition to the monitoring specified in this permit, the permittee shall use the appropriate method(s) in accordance with procedures approved by DEQ.
(9 VAC 5-80-110)

107. **Reporting** – The permittee shall submit semi-annual "Subsequent Compliance Reports" as required by 40 CFR 63, Subpart EEEE (Organic Liquids Distribution (Non-Gasoline) NESHAP), as specified in 40 CFR 63.2386(d).
(9 VAC 5-80-110, 9 VAC 5-60-90, 9 VAC 5-60-100, and 40 CFR 63.2386(a))

Insignificant Emission Units

The following emission units at the facility are identified in the application as insignificant emission units under 9 VAC 5-80-720:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
ES-1	Resin Storage Silo #1	9 VAC 5-80-720 B	PM/PM-10	
ES-2	Resin Storage Silo #2	9 VAC 5-80-720 B	PM/PM-10	
ES-3	Resin Storage Silo #3	9 VAC 5-80-720 B	PM/PM-10	
ES-4	Resin Storage Silo #4	9 VAC 5-80-720 B	PM/PM-10	
ES-5	Resin Storage Silo #5	9 VAC 5-80-720 B	PM/PM-10	
ES-6	Resin Storage Silo #6	9 VAC 5-80-720 B	PM/PM-10	
ES-7	Resin Storage Silo #7	9 VAC 5-80-720 B	PM/PM-10	
ES-8	Resin Storage Silo #8	9 VAC 5-80-720 B	PM/PM-10	
ES-9	Resin Storage Silo #9	9 VAC 5-80-720 B	PM/PM-10	
ES-10	Resin Storage Silo #10	9 VAC 5-80-720 B	PM/PM-10	
ES-11	Resin Storage Silo #11	9 VAC 5-80-720 B	PM/PM-10	
ES-12	Resin Storage Silo #12	9 VAC 5-80-720 B	PM/PM-10	
ES-13	Resin Storage Silo #13	9 VAC 5-80-720 B	PM/PM-10	
ES-14	Resin Storage Silo #14	9 VAC 5-80-720 B	PM/PM-10	
ES-16	Vacuum Transfer Blower	9 VAC 5-80-720 B	PM/PM-10	
ES-19	Vacuum Transfer Blower	9 VAC 5-80-720 B	PM/PM-10	
ES-47	Green Colorant Storage Silo #15	9 VAC 5-80-720 B	PM/PM-10	
ES-59	Resin Storage Silo #15	9 VAC 5-80-720 B	PM/PM-10	
ES-61	Resin Storage Silo #18	9 VAC 5-80-720 B	PM/PM-10	
ES-62	Resin Storage Silo #19	9 VAC 5-80-720 B	PM/PM-10	
ES-63	Resin Storage Silo #20	9 VAC 5-80-720 B	PM/PM-10	
ES-60a	Flame Retardant Bin #18	9 VAC 5-80-720 B	PM/PM-10	
ES-60b	Flame Retardant Bin #19	9 VAC 5-80-720 B	PM/PM-10	
ES-70	Beringer Pressure Plate Cleaner	9 VAC 5-80-720 B	VOC	
ES-100	Vacuum Transfer Blower	9 VAC 5-80-720 B	PM/PM-10	

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
ES-101	Positive Displacement Blower	9 VAC 5-80-720 B	PM/PM-10	
ES-102	Vacuum Transfer Blower	9 VAC 5-80-720 B	PM/PM-10	
ES-103	Positive Displacement Blower	9 VAC 5-80-720 B	PM/PM-10	
ES-104	Positive Displacement Blower	9 VAC 5-80-720 B	PM/PM-10	
ES-105	Positive Displacement Blower	9 VAC 5-80-720 B	PM/PM-10	
ES-112	Fork Lift Propane Tank	9 VAC 5-80-720 B	VOC	1,000 gallons
ES-113	Blowing Agent Tank (non-VOC, non-HAP)	9 VAC 5-80-720 B	VOC	30,000 gallons
ES-127	Propane Tank	9 VAC 5-80-720 B	VOC	1,000 gallons
ES-125	Resin Storage Silo #21	9 VAC 5-80-720 B	PM/PM-10	
ES-126	Natural gas-fired dryer	9 VAC 5-80-720 C	Products of natural gas fuel combustion	2,000,000 BTU/hr
ES-500	Air make-up unit with natural gas-fired burner	9 VAC 5-80-720 C	Products of natural gas fuel combustion	3,500,000 BTU/hr
ES-501	Air make-up unit with natural gas-fired burner	9 VAC 5-80-720 C	Products of natural gas fuel combustion	1,890,000 BTU/hr
ES-501a	Air make-up unit with natural gas-fired burner	9 VAC 5-80-720 C	Products of natural gas fuel combustion	1,890,000 BTU/hr
ES-502	Forty individual natural gas-fired heaters	9 VAC 5-80-720 C	Products of natural gas fuel combustion	200,000 BTU/hr
ES-503	Product Marking Pens	9 VAC 5-80-720 B	VOC	
ES-506	Bag Sealing	9 VAC 5-80-720 B	VOC/HAP/PM/PM-10	
ES-507	Stretch Wrap Hot Wires	9 VAC 5-80-720 B	VOC/HAP/PM/PM-10	
ES-508	Aerosol Cans, including Puncture System for Used Cans	9 VAC 5-80-720 B	VOC	
ES-509	Diesel Tanks	9 VAC 5-80-720 B	VOC	
ES-510	Parts Washers	9 VAC 5-80-720 B	VOC	
ES-512	Oil/Water Separator and Tank	9 VAC 5-80-720 B	VOC	

These emission units are presumed to be in compliance with all requirements of the federal Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping, or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Permit Shield & Inapplicable Requirements

Compliance with the provisions of this permit shall be deemed compliance with all applicable requirements in effect as of the permit issuance date as identified in this permit. This permit shield covers only those applicable requirements covered by terms and conditions in this permit and the following requirements which have been specifically identified as being not applicable to this permitted facility:

Citation	Title of Citation	Description of Applicability
9 VAC 5 Chapter 40, Articles 5 thru 24, 26 thru 35 and 37 thru 54	Emissions Standards for Various Source Categories (Rules 4-5 thru 4-24, 4-26 thru 4-35 and 4-37 thru 4-54)	Applicable to the respective source category.
9 VAC 5 Chapter 50, Article 5	Environmental Protection Agency Standards of Performance For New Stationary Sources	U.S. Environmental Protection Agency Regulations on Standards of Performance For New Stationary Sources (40 CFR Part 60)
9 VAC 5 Chapter 50, Article 6	Standards of Performance For Regulated Medical Waste Incinerators (Rule 5-6)	Applicable to each regulated medical waste incinerator.
9 VAC 5 Chapter 60, Article 1	Environmental Protection Agency National Emission Standards For Hazardous Air Pollutants (Rule 6-1)	U.S. Environmental Protection Agency Regulations on National Emission Standards For Hazardous Air Pollutants (40 CFR Part 61)
9 VAC 5 Chapter 60, Article 4	Emissions Standards for Toxic Pollutants for Existing Sources (Rule 6-4)	Applicable to any stationary source (or portion of it) constructed, modified or relocated prior to March 17, 1972.
9 VAC 5 Chapter 70	Air Pollution Episode Prevention	Applicable in nonattainment areas designated in 9 VAC 5-20-204.
9 VAC 5 Chapter 80, Article 9	Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas	Applicable to the construction or reconstruction of any major stationary source or major modification in nonattainment areas.
9 VAC 5 Chapter 80, Article 3	Acid Rain Operating Permits	Applicable to any affected source that has an affected unit under the provisions of 9 VAC 5-80-380, except as provided in 9 VAC 5-80-360 C.

Citation	Title of Citation	Description of Applicability
9 VAC 5 Chapter 91	Regulations for the Control of Motor Vehicle Emissions	Applicable to the Northern Virginia program area.
9 VAC 5 Chapter 150	Regulation for Transportation Conformity	Applicable in all nonattainment and maintenance areas for transportation-related criteria pollutants for which the area is designated nonattainment or has a maintenance plan.
9 VAC 5 Chapter 160	Regulation for General Conformity	Applicable in all nonattainment and maintenance areas for criteria pollutants for which the area is designated nonattainment or has a maintenance plan.
9 VAC 5 Chapters 190, 220, 221, and 230	various	Facility-specific variances
Chapter 200	National Low Emission Vehicle Program	Not applicable to stationary sources.
Chapter 500	Exclusionary General Permit for Title V Permit	Not applicable to facilities with Title V permits.
Chapter 510	Nonmetallic Mineral General Permit	Applicable only to the respective source category.

Nothing in this permit shield shall alter the provisions of §303 of the federal Clean Air Act, including the authority of the administrator under that section, the liability of the owner for any violation of applicable requirements prior to or at the time of permit issuance, or the ability to obtain information by: (i) the administrator pursuant to §114 of the federal Clean Air Act; (ii) the Board pursuant to §10.1-1314 or §10.1-1315 of the Virginia Air Pollution Control Law; or (iii) the Department pursuant to §10.1-1307.3 of the Virginia Air Pollution Control Law.
(9 VAC 5-80-140)

General Conditions

108. **Federal Enforceability** – All terms and conditions in this permit are enforceable by the administrator and citizens under the federal Clean Air Act, except those that have been designated as only state-enforceable.
(9 VAC 5-80-110 N)

109. **Permit Expiration** – This permit has a fixed term of five years. The expiration date shall be the date five years from the date of issuance. Unless the owner submits a timely and complete application for renewal to the Department consistent with the requirements of 9 VAC 5-80-80, the right of the facility to operate shall be terminated upon permit expiration.
(9 VAC 5-80-80 B, C and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

110. **Permit Expiration** – The owner shall submit an application for renewal at least six months but no earlier than eighteen months prior to the date of permit expiration.
(9 VAC 5-80-80 B, C and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

111. **Permit Expiration** – If an applicant submits a timely and complete application for an initial permit or renewal under this section, the failure of the source to have a permit or the operation of the source without a permit shall not be a violation of Article 1, Part II of 9 VAC 5 Chapter 80, until the Board takes final action on the application under 9 VAC 5-80-150.
(9 VAC 5-80-80 B, C and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

112. **Permit Expiration** – No source shall operate after the time that it is required to submit a timely and complete application under subsections C and D of 9 VAC 5-80-80 for a renewal permit, except in compliance with a permit issued under Article 1, Part II of 9 VAC 5 Chapter 80.
(9 VAC 5-80-80 B, C and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

113. **Permit Expiration** – If an applicant submits a timely and complete application under section 9 VAC 5-80-80 for a permit renewal but the Board fails to issue or deny the renewal permit before the end of the term of the previous permit, (i) the previous permit shall not expire until the renewal permit has been issued or denied and (ii) all the terms and conditions of the previous permit, including any permit shield granted pursuant to 9 VAC 5-80-140, shall remain in effect from the date the application is determined to be complete until the renewal permit is issued or denied.
(9 VAC 5-80-80 B, C and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

114. **Permit Expiration** – The protection under subsections F 1 and F 5 (ii) of section 9 VAC 5-80-80 F shall cease to apply if, subsequent to the completeness determination made pursuant section 9 VAC 5-80-80 D, the applicant fails to submit by the deadline specified in writing by the Board any additional information identified as being needed to process the application.
(9 VAC 5-80-80 B, C and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

115. **Recordkeeping and Reporting** – All records of monitoring information maintained to demonstrate compliance with the terms and conditions of this permit shall contain, where applicable, the following:

a. The date, place as defined in the permit, and time of sampling or measurements.

b. The date(s) analyses were performed.

c. The company or entity that performed the analyses.

d. The analytical techniques or methods used.

e. The results of such analyses.

f. The operating conditions existing at the time of sampling or measurement.

(9 VAC 5-80-110 F)

116. **Recordkeeping and Reporting** – Records of all monitoring data and support information shall be retained for at least five years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.
(9 VAC 5-80-110 F)

117. **Recordkeeping and Reporting** – The permittee shall submit the results of monitoring contained in any applicable requirement to DEQ no later than **March 1** and **September 1** of each calendar year. This report must be signed by a responsible official, consistent with 9 VAC 5-80-80 G, and shall include:

a. The time period included in the report. The time periods to be addressed are January 1 to June 30 and July 1 to December 31.

b. All deviations from permit requirements. For purposes of this permit, deviations include, but are not limited to:

(1) Exceedance of emissions limitations or operational restrictions;

(2) Excursions from control device operating parameter requirements, as documented by continuous emission monitoring, periodic monitoring, or compliance assurance monitoring which indicates an exceedance of emission limitations or operational restrictions; or,

(3) Failure to meet monitoring, recordkeeping, or reporting requirements contained in this permit.

c. If there were no deviations from permit conditions during the time period, the permittee shall include a statement in the report that "no deviations from permit requirements occurred during this semi-annual reporting period."

(9 VAC 5-80-110 F)

118. **Annual Compliance Certification** – Exclusive of any reporting required to assure compliance with the terms and conditions of this permit or as part of a schedule of compliance contained in this permit, the permittee shall submit to EPA and DEQ no later than **March 1** each calendar year a certification of compliance with all terms and conditions of this permit including emission limitation standards or work practices for the period ending December 31. The compliance certification shall comply with such additional requirements that may be specified pursuant to §114(a)(3) and §504(b) of the federal Clean Air Act. The permittee shall maintain a copy of the certification for five years after submittal of the certification. This certification shall be signed by a responsible official, consistent with 9 VAC 5-80-80 G, and shall include:

a. The time period included in the certification. The time period to be addressed is January 1 to December 31.

b. The identification of each term or condition of the permit that is the basis of the certification.

c. The compliance status.

d. Whether compliance was continuous or intermittent, and if not continuous, documentation of each incident of non-compliance.

e. Consistent with subsection 9 VAC 5-80-110 E, the method or methods used for determining the compliance status of the source at the time of certification and over the reporting period.

f. Such other facts as the permit may require to determine the compliance status of the source.

g. The annual compliance certification shall be submitted to EPA in electronic format only to the following electronic mailing address: R3_APD_Permits@epa.gov.

(9 VAC 5-80-110 K.5)

119. **Permit Deviation Reporting** – The permittee shall notify DEQ within four daytime business hours after discovery of any deviations from permit requirements which may cause excess emissions for more than one hour, including those attributable to upset conditions as may be defined in this permit. In addition, within 14 days of the discovery, the permittee shall provide a written statement explaining the problem, any corrective actions or preventative measures taken, and the estimated duration of the permit deviation. The

occurrence should also be reported in the next semi-annual compliance monitoring report pursuant to General Condition 117 of this permit.
(9 VAC 5-80-110 F.2 and 9 VAC 5-80-250)

120. **Failure/Malfunction Reporting** – In the event that any affected facility or related air pollution control equipment fails or malfunctions in such a manner that may cause excess emissions for more than one hour, the owner shall, as soon as practicable but no later than four daytime business hours after the malfunction is discovered, notify DEQ of such failure or malfunction and shall within 14 days of discovery provide a written statement giving all pertinent facts, including the estimated duration of the breakdown. Owners subject to the requirements of 9 VAC 5-40-50 C and 9 VAC 5-50-50 C are not required to provide the written statement prescribed in this paragraph for facilities subject to the monitoring requirements of 9 VAC 5-40-40 and 9 VAC 5-50-40. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the owner shall notify DEQ.
(9 VAC 5-20-180 C)

121. **Severability** – The terms of this permit are severable. If any condition, requirement or portion of the permit is held invalid or inapplicable under any circumstance, such invalidity or inapplicability shall not affect or impair the remaining conditions, requirements, or portions of the permit.
(9 VAC 5-80-110 G.1)

122. **Duty to Comply** – The permittee shall comply with all terms and conditions of this permit. Any permit noncompliance constitutes a violation of the federal Clean Air Act or the Virginia Air Pollution Control Law or both and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or, for denial of a permit renewal application.
(9 VAC 5-80-110 G.2)

123. **Need to Halt or Reduce Activity not a Defense** – It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
(9 VAC 5-80-110 G.3)

124. **Permit Modification** – A physical change in, or change in the method of operation of, this stationary source may be subject to permitting under State Regulations 9 VAC 5-80-50, 9 VAC 5-80-1100, 9 VAC 5-80-1790, or 9 VAC 5-80-2000 and may require a permit modification and/or revisions except as may be authorized in any approved alternative operating scenarios.
(9 VAC 5-80-190 and 9 VAC 5-80-260)

125. **Property Rights** – The permit does not convey any property rights of any sort, or any exclusive privilege.
(9 VAC 5-80-110 G.5)

126. **Duty to Submit Information** – The permittee shall furnish to the Board, within a reasonable time, any information that the Board may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Board copies of records required to be kept by the permit and, for information claimed to be confidential, the permittee shall furnish such records to the Board along with a claim of confidentiality.
(9 VAC 5-80-110 G.6)

127. **Duty to Submit Information** – Any document (including reports) required in a permit condition to be submitted to the Board shall contain a certification by a responsible official that meets the requirements of 9 VAC 5-80-80 G.
(9 VAC 5-80-110 K.1)

128. **Duty to Pay Permit Fees** – The owner of any source for which a permit under 9 VAC 5-80-50 through 9 VAC 5-80-300 was issued shall pay permit fees consistent with the requirements of 9 VAC 5-80-310 through 9 VAC 5-80-350. The actual emissions covered by the permit program fees for the preceding year shall be calculated by the owner and submitted to the Department by April 15 of each year. The calculations and final amount of emissions are subject to verification and final determination by DEQ.
(9 VAC 5-80-110 H and 9 VAC 5-80-340 C)

129. **Fugitive Dust Emission Standards** – During the operation of a stationary source or any other building, structure, facility, or installation, no owner or other person shall cause or permit any materials or property to be handled, transported, stored, used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions may include, but are not limited to, the following:

a. Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land;

b. Application of asphalt, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which may create airborne dust; the paving of roadways and the maintaining of them in a clean condition;

c. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty material. Adequate containment methods shall be employed during sandblasting or other similar operations;

d. Open equipment for conveying or transporting material likely to create objectionable air pollution when airborne shall be covered or treated in an equally effective manner at all times when in motion; and,

e. The prompt removal of spilled or tracked dirt or other materials from paved streets and of dried sediments resulting from soil erosion.

(9 VAC 5-50-90)

130. **Startup, Shutdown, and Malfunction** – At all times, including periods of startup, shutdown, soot blowing, and malfunction, owners shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with air pollution control practices for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Board, which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

(9 VAC 5-50-20 E)

131. **Alternative Operating Scenarios** – Contemporaneously with making a change between reasonably anticipated operating scenarios identified in this permit, the permittee shall record in a log at the permitted facility a record of the scenario under which it is operating. The permit shield described in 9 VAC 5-80-140 shall extend to all terms and conditions under each such operating scenario. The terms and conditions of each such alternative scenario shall meet all applicable requirements including the requirements of 9 VAC 5 Chapter 80, Article 1.

(9 VAC 5-80-110 J)

132. **Inspection and Entry Requirements** – The permittee shall allow DEQ, upon presentation of credentials and other documents as may be required by law, to perform the following:

a. Enter upon the premises where the source is located or emissions-related activity is conducted, or where records must be kept under the terms and conditions of the permit.

b. Have access to and copy, at reasonable times, any records that must be kept under the terms and conditions of the permit.

c. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit.

d. Sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

(9 VAC 5-80-110 K.2)

133. **Reopening For Cause** – The permit shall be reopened by the Board if additional federal requirements become applicable to a major source with a remaining permit term of three years or more. Such reopening shall be completed no later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to 9 VAC 5-80-80 F.

a. The permit shall be reopened if the Board or the administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

b. The permit shall be reopened if the administrator or the Board determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

c. The permit shall not be reopened by the Board if additional applicable state requirements become applicable to a major source prior to the expiration date established under 9 VAC 5-80-110 D.

(9 VAC 5-80-110 L)

134. **Permit Availability** – Within five days after receipt of the issued permit, the permittee shall maintain the permit on the premises for which the permit has been issued and shall make the permit immediately available to DEQ upon request.
(9 VAC 5-80-150 E)

135. **Transfer of Permits** – No person shall transfer a permit from one location to another, unless authorized under 9 VAC 5-80-130, or from one piece of equipment to another.
(9 VAC 5-80-160)

136. **Transfer of Permits** – In the case of a transfer of ownership of a stationary source, the new owner shall comply with any current permit issued to the previous owner. The new owner shall notify the Board of the change in ownership within 30 days of the transfer and shall comply with the requirements of 9 VAC 5-80-200.
(9 VAC 5-80-160)

137. **Transfer of Permits** – In the case of a name change of a stationary source, the owner shall comply with any current permit issued under the previous source name. The owner shall notify the Board of the change in source name within 30 days of the name change and shall comply with the requirements of 9 VAC 5-80-200.
(9 VAC 5-80-160)

138. **Permit Revocation or Termination for Cause** – A permit may be revoked or terminated prior to its expiration date if the owner knowingly makes material misstatements in the permit application or any amendments thereto or if the permittee violates, fails, neglects or refuses to comply with the terms or conditions of the permit, any applicable requirements, or the applicable provisions of 9 VAC 5 Chapter 80, Article 1. The Board may suspend, under such conditions and for such period of time as the Board may prescribe any permit for any of the grounds for revocation or termination or for any other violations of these regulations.
(9 VAC 5-80-190 C and 9 VAC 5-80-260)

139. **Duty to Supplement or Correct Application** – Any applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrections. An applicant shall also provide additional information as necessary to

address any requirements that become applicable to the source after the date a complete application was filed but prior to release of a draft permit.

(9 VAC 5-80-80 E)

140. **Stratospheric Ozone Protection** – If the permittee handles or emits one or more Class I or II substances subject to a standard promulgated under or established by Title VI (Stratospheric Ozone Protection) of the federal Clean Air Act, the permittee shall comply with all applicable sections of 40 CFR Part 82, Subparts A to F.

(40 CFR Part 82, Subparts A-F)

141. **Asbestos Requirements** – The permittee shall comply with the requirements of National Emissions Standards for Hazardous Air Pollutants (40 CFR 61) Subpart M, National Emission Standards for Asbestos as it applies to the following: Standards for Demolition and Renovation (40 CFR 61.145), Standards for Insulating Materials (40 CFR 61.148), and Standards for Waste Disposal (40 CFR 61.150).

(9 VAC 5-60-70 and 9 VAC 5-80-110 A.1)

142. **Accidental Release Prevention** – If the permittee has more, or will have more than a threshold quantity of a regulated substance in a process, as determined by 40 CFR 68.115, the permittee shall comply with the requirements of 40 CFR Part 68.

(40 CFR Part 68)

143. **Changes to Permits for Emissions Trading** – No permit revision shall be required under any federally approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit.

(9 VAC 5-80-110 I)

144. **Emissions Trading** – Where the trading of emissions increases and decreases within the permitted facility is to occur within the context of this permit and to the extent that the regulations provide for trading such increases and decreases without a case-by-case approval of each emissions trade:

a. All terms and conditions required under 9 VAC 5-80-110, except subsection N, shall be included to determine compliance.

b. The permit shield described in 9 VAC 5-80-140 shall extend to all terms and conditions that allow such increases and decreases in emissions.

c. The owner shall meet all applicable requirements including the requirements of 9 VAC 5-80-50 through 9 VAC 5-80-300.

(9 VAC 5-80-110 I)

State-Only Enforceable Requirements

Conditions 145–148 are not required under the federal Clean Air Act or under any of its applicable federal requirements, and are not subject to the requirements of 9 VAC 5-80-290 concerning review of proposed permits by EPA and draft permits by affected states.

145. **Throughput: Methanol** – The throughput of methanol to the facility shall not exceed 21.2 lbs/hr and 77.9 tons/yr, calculated monthly as the sum of each consecutive 12-month period. Methanol throughput shall be calculated as:

$$M = \left(\sum_{i=1}^{n} C_i B_i \right)$$

Where:

M	=	Methanol throughput rate (lb/time period)
C_i	=	content of methanol in the blowing agent utilized during the time period (lb of methanol/lb of blowing agent)
B_i	=	weight of each blowing agent utilized during the time period (pounds/time period)
n	=	number of blowing agents

Average hourly methanol throughput shall be calculated once each 24-hour period. Compliance with the annual methanol throughput shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

(9 VAC 5-80-110N, 9 VAC 5-80-300, and Condition 73 of 6/01/2017 Permit)

146. **Emission Limits: Methanol** – Methanol emissions from the facility shall not exceed 21.2 lbs/hr and 77.9 tons/yr. Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits.

(9 VAC 5-80-110N, 9 VAC 5-80-300, and Condition 74 of 6/01/2017 Permit)

147. **Emission Limits: Methanol** – Methanol emissions from the facility shall be calculated for each process line by mass balance as specified by the formula below:

$$M = \left(\sum_{i=1}^{n} C_i B_i \right)$$

Where:

M	=	Methanol Emission (lb/time period)

C = content of methanol in the blowing agent utilized during the time period (lb of methanol/lb of blowing agent)

B = amount of blowing agent utilized during the time period (lb/time period)

Average hourly methanol emissions shall be calculated once each 24-hour period. Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period.
(9 VAC 5-80-110N, 9 VAC 5-80-300, and Condition 75 of 6/01/2017 Permit)

148. **On Site Records** – The permittee shall maintain records of emissions data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with DEQ. These records shall include, but are not limited to:

a. Average hourly, monthly, and annual throughput (in tons) of methanol used for each process line with methanol throughput and facility-wide.

b. Facility-wide average hourly, monthly, and annual emissions (in tons) of methanol. Methanol emissions shall be calculated as shown in Condition 147.

c. Material Safety Data Sheets (MSDS) or other vendor information showing the methanol content for each blowing agent used.

These records shall be available for inspection by the DEQ and shall be current for at least the most recent five years.
(9 VAC 5-80-110N, 9 VAC 5-80-300, and Condition 76 of 6/01/2017 Permit)

ATTACHMENT A

SOURCE TESTING REPORT FORMAT

Report Cover
1. Plant name and location
2. Units tested at source (indicate Ref. No. used by source in permit or registration)
3. Test Dates.
4. Tester; name, address and report date

Certification
1. Signed by team leader/certified observer (include certification date)
2. Signed by responsible company official
3. *Signed by reviewer

Copy of approved test protocol

Summary
1. Reason for testing
2. Test dates
3. Identification of unit tested & the maximum rated capacity
4. *For each emission unit, a table showing:
   a. Operating rate
   b. Test Methods
   c. Pollutants tested
   d. Test results for each run and the run average
   e. Pollutant standard or limit
5. Summarized process and control equipment data for each run and the average, as required by the test protocol
6. A statement that test was conducted in accordance with the test protocol or identification & discussion of deviations, including the likely impact on results
7. Any other important information

Source Operation
1. Description of process and control devices
2. Process and control equipment flow diagram
3. Sampling port location and dimensioned cross section Attached protocol includes: sketch of stack (elevation view) showing sampling port locations, upstream and downstream flow disturbances and their distances from ports; and a sketch of stack (plan view) showing sampling ports, ducts entering the stack and stack diameter or dimensions

Test Results
1. Detailed test results for each run
2. *Sample calculations
3. *Description of collected samples, to include audits when applicable

Appendix
1. *Raw production data
2. *Raw field data
3. *Laboratory reports
4. *Chain of custody records for lab samples
5. *Calibration procedures and results
6. Project participants and titles
7. Observers' names (industry and agency)
8. Related correspondence
9. Standard procedures

* Not applicable to visible emission evaluations

Compliance Assurance Monitoring (CAM) Plan for the Regenerative Thermal Oxidizer (RTO) (ES-75)

	Indicator 1	Indicator 2	Indicator 3
I. Indicator	Chamber temperature	Work practice	Periodic destruction efficiency testing
Measurement Approach	The chamber temperature is monitored by a thermocouple.	Visual inspection of the supplemental fuel indicator valves confirming valves are in an "ON" position every operating day. Annual inspection of the two poppet valves within the RTO.	Testing according to reference method 25 or 25A (40 CFR 60, Appendix A) shall be conducted to verify destruction efficiency.
II. Indicator Range	An excursion is defined as a temperature reading less than 1450°F, except during annual inspections required under Indicator 2. Excursions trigger an inspection, corrective action and a reporting requirement	An excursion is defined as failure to perform an annual poppet valve inspection or supplemental fuel indicator valve inspections every operating day.	Greater than or equal to 95.0% VOC destruction efficiency.
Quality Improvement Plan (QIP) Threshold	No more than six excursions above or below the indicator range in any 6-month reporting period (temperatures below indicator range during annual inspections required under Indicator 2 are not considered excursions).	N/A	N/A
III. Performance Criteria **Data Representativeness**	The sensor is installed in the RTO chamber as an integral part of the RTO design. The sensor measures temperatures from 559° to 2282°F and has a standard tolerance of +/- 0.75%. The chart recorder range is 0° to 2000°F, with minor divisions of 40°F.	N/A	The facility shall be operating at the maximum production rate during the testing.
Verification of Operational Status	N/A	N/A	N/A
QA/QC Practices and Criteria	Accuracy of the thermocouple will be verified by independently measuring the RTO temperature using an existing dual element thermocouple located within the RTO chamber via a hand-held meter. This accuracy check will be conducted at least annually by trained personnel. The acceptance criterion is +/- 40°F.	N/A	Trained personnel to perform test. Test procedures shall be as required by reference method 25 (40 CFR 60, Appendix A). A test protocol shall be submitted to and approved by DEQ prior to testing. One copy of the test results shall be submitted to DEQ within 60 days after test completion.
Monitoring Frequency and Data Collection Procedure	Measured and recorded continuously on a Z-fold chart recorder.	Record results of annual inspections of the two poppet valves and daily inspections of the supplemental fuel indicator valves.	The test shall be performed within 18 months of each renewal of the Title V permit.